Claims

1. (currently amended) An optical transceiver, comprising:

a diffractive optical element (DOE); and

an optical support having at least a first surface and a second surface, wherein the DOE is configured to direct at least a portion of ~~an~~ a free space optical signal to the first surface and wherein the first surface has a curvature configured to converge the portion of the free space optical signal and direct the converged portion to the second surface.

2. (original) The optical transceiver of claim 1, wherein the optical support includes a third surface and the DOE is attached to the third surface.

3. (original) The optical transceiver of claim 2, wherein the DOE is a transmission hologram.

4. (original) The optical transceiver of claim 2, wherein the DOE is a reflection hologram.

5. (currently amended) The optical transceiver of claim 2, wherein the DOE is configured so that the portion of the free space optical signal directed by the DOE to the first surface propagates at an angle that is greater than or equal to a critical angle with respect to the third surface.

6. (currently amended) The optical transceiver of claim 2, wherein the DOE is configured to direct free space optical signals in a selected wavelength range to the first surface.

7. (currently amended) The optical transceiver of claim 6, wherein the DOE is configured so that free space optical signals outside of the selected wavelength are not directed to the first surface.

8. (currently amended) An optical transceiver, comprising:

a diffractive optical element;

an optical support that includes a focusing surface and a coupling surface, wherein the focusing surface is configured to at least partially converge ~~an~~ a free space optical beam received from the diffractive optical element to the coupling surface and at least partially collimate ~~an~~ a free space optical beam received from the coupling surface and direct the partially collimated free space optical beam to the diffractive optical element.

9. (original) The optical transceiver of claim 8, wherein the diffractive optical element is situated at a second coupling surface of the optical support.

10. (withdrawn) An optical support for an optical transceiver, comprising:

a first surface configured to receive a hologram;

a second surface having optical power sufficient to at least partially converge an optical signal received from the first surface; and

a coupling surface situated to receive the at least partially converged optical signal from the second surface and direct the at least partially converged optical signal out of the optical support.

11. (withdrawn) The optical support of claim 10, wherein the second surface is situated to receive an optical signal received from the first surface that propagates at an angle greater than the critical angle with respect to the first surface.

12. (withdrawn) The optical support of claim 10, wherein the second surface is a reflective surface.

13. (withdrawn) The optical support of claim 10, wherein the second surface is a curved reflective surface.

14. (withdrawn) The optical support of claim 10, further comprising a fourth surface configured to receive the optical signal from the second surface and direct the optical signal to the coupling surface.

15. (withdrawn) The optical support of claim 14, wherein the fourth surface has an optical power that tends to converge the optical signal received from the second surface.

16. (withdrawn) The optical support of claim 15, wherein the second surface and the fourth surface are reflective surfaces.

17. (withdrawn) The optical support of claim 16, wherein the coupling surface is a portion of the second surface.

18. (withdrawn) An optical support for an optical transceiver, comprising:

first and second planar surfaces, wherein the second planar surface is tilted and substantially parallel with respect the first surface;

a curved reflective surface, configured to receive an optical signal from the first planar surface that propagates at an angle greater than a critical angle with respect to the first planar surface; and

a coupling surface configured to receive the optical signal from the curved reflective surface.

19. (withdrawn) An adjustable optical transceiver, comprising:

an optical support configured to receive an optical signal and having a first curved surface;

a diffractive optical element situated at a first coupling surface of the optical support and configured to transmit the optical signal; and

a reflector configured to receive the optical signal from the diffractive optical element and direct the optical signal to the diffractive optical element and being adjustable so that at least a portion of the optical signal directed to the diffractive optical element by the reflector is directed to the first curved surface.

20. (withdrawn) The adjustable optical transceiver of claim 19, wherein the diffractive optical element is a hologram.

21. (withdrawn) The adjustable optical transceiver of claim 19, wherein the optical support includes a second coupling surface configured to receive at least a portion of the optical signal from the first curved surface.

22. (withdrawn) The adjustable optical transceiver of claim 19, further comprising a reservoir of an index matching liquid, so that the index matching fluid is situated between the diffractive optical element and the reflector.

23. (withdrawn) An optical mount, comprising:

a contact plate having a mounting surface configured to be attachable to a window;

an adjustment plate that includes an adjustment mechanism configured to press against the contact plate and an attachment portion configured for attachment of a an optical component.

24. (withdrawn) An optical mounting assembly, comprising at least two optical mounts as recited in claim 23.

25. (currently amended) A method of receiving ~~an~~ a free space optical signal, comprising:

directing the free space optical signal to a diffractive optical element;

directing at least a portion of the free space optical signal received by the diffractive optical element to a surface of an optical support so that the portion propagates in the optical support at an angle greater than a critical angle with respect to the surface.

26. (currently amended) The method of claim 25, further comprising directing the portion of the free space optical signal to a curved surface of the optical support having optical power.

27. (original) The method of claim 26, wherein the curved surface corresponds to a section of a parabola.

28. (currently amended) A method of transmitting ~~an~~ a free space optical signal, comprising:

directing the free space optical signal to a curved surface of an optical support having optical power;

directing the free space optical signal from the curved surface to a surface of an optical support at an angle greater than a critical angle with respect to the surface; and

providing a diffractive optical element at the surface of the optical support so that at least a portion of the free space optical signal is directed out of the optical support.

29. (original) The method of claim 28, wherein the diffractive optical element is a hologram.

30. (original) The method of claim 29, wherein the curved surface corresponds to a section of a parabola.

31. (withdrawn) A method of receiving an optical signal, comprising:

directing the optical signal through a diffractive optical element; and

reflecting the optical signal back to the diffractive optical element at an angle such that the optical signal is directed to an optical surface having optical power.

32. (withdrawn) The method of claim 31, further comprising providing an optical support for the diffractive optical element and directing the optical signal back to the diffractive optical element through an index matching material.

33. (withdrawn) The method of claim 32, wherein the optical signal is directed to the optical surface having optical power at an angle greater than a critical angle with respect to the diffractive optical element.

34. (new) An optical transceiver, comprising:

a diffractive optical element (DOE); and

a prism having at least a first surface and a second surface, wherein the DOE is configured to direct at least a portion of an optical signal to the first surface and wherein the first surface has a curvature configured to converge the portion of the optical signal and direct the converged portion to the second surface.

35. (new) The optical transceiver of claim 34, wherein the prism includes a third surface and the DOE is attached to the third surface.

36. (new) The optical transceiver of claim 35, wherein the DOE is a transmission hologram.

37. (new) The optical transceiver of claim 35, wherein the DOE is a reflection hologram.

38. (new) The optical transceiver of claim 35, wherein the DOE is configured so that the portion of the optical signal directed by the DOE to the first surface propagates at an angle that is greater than or equal to a critical angle with respect to the third surface.

39. (new) The optical transceiver of claim 35, wherein the DOE is configured to direct optical signals in a selected wavelength range to the first surface.

40. (new) The optical transceiver of claim 35, wherein the DOE is configured so that optical signals outside of the selected wavelength are not directed to the first surface.

41. (new) An optical transceiver, comprising:

a diffractive optical element;

a prism that includes a focusing surface and a coupling surface, wherein the focusing surface is configured to at least partially converge an optical beam received from the diffractive optical element to the coupling surface and at least partially collimate an optical beam received from the coupling surface and direct the partially collimated beam to the diffractive optical element.

42. (new) The optical transceiver of claim 41, wherein the diffractive optical element is situated at a second coupling surface of the optical support.

43. (new) A method of receiving an optical signal, comprising:

directing the optical signal to a diffractive optical element;

directing at least a portion of the optical signal received by the diffractive optical element to a surface of a prism so that the portion propagates in the optical support at an angle greater than a critical angle with respect to the surface.

44. (new) The method of claim 43, further comprising directing the portion of the optical signal to a curved surface of the prism having optical power.

45. (new) The method of claim 44, wherein the curved surface corresponds to a section of a parabola.

46. (new) A method of transmitting an optical signal, comprising:

directing the optical signal to a curved surface of a prism having optical power;

directing the optical signal from the curved surface of the prism to a second surface of the prism at an angle greater than a critical angle with respect to the second surface; and

providing a diffractive optical element at the second surface of the prism so that at least a portion of the optical signal is directed out of the prism.

47. (original) The method of claim 46, wherein the diffractive optical element is a hologram.

48. (new) The method of claim 46, wherein the curved surface corresponds to a section of a parabola.